



## DEVELOPMENT OF 3S-BASED NURSING CARE INSTRUMENTS (SDKI, SLKI, SIKI) IN PATIENTS WITH VENTILATORS

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### ABSTRACT

Documentation instrument for quality nursing care according to standards. However, there is no instrument for nursing care for patients installing ventilators according to Indonesian nursing standards. This research aims to develop a 3S-based nursing care instrument (SDKI, SLKI, SIKI) for ventilator patients. The research design is Research and Development carried out in 2 stages. The first phase population is 100 nursing care. The first stage was FGD 1, divided into 3 groups, namely 10 executive nurses, 6 nursing management staff, and 1 expert. The second stage population was 5 nurses. The second stage was carried out FGD 2 with participants from 6 levels of nursing management. The sample used in this research was purposive sampling. The design developed is an instrument for documenting nursing care for ventilator patients. The analysis uses the CVI and KR20 tests. Results: Evaluation of nursing care instruments shows that aspects of nursing outcomes, implementation, and evaluation are not by standards. Instrument development consists of 5 main problems that often arise in ventilator patients. The I-CVI result is  $\geq 0.78$ , which is interpreted as valid. The KR result is  $> 0.6$ , which means it is reliable. The recommendation from the research results is that the development of nursing care instruments can be applied in treating patients with ventilators. Conclusion: The development of a nursing care instrument was declared to be valid and reliable in categories in terms of functionality, efficiency, and usability, so it is recommended that nurses use it to improve the quality of hospital services.

Keywords: nursing care; SDKI; SIKI; SLKI; ventilator

<b>First Received</b> 10 December 2023	<b>Revised</b> 18 December 2023	<b>Accepted</b> 30 December 2023
<b>Final Proof Received</b> 08 January 2024		<b>Published</b> 19 January 2024

### How to cite (in APA style)

Ambarwati, D., Kurniawati, N., Airlangga, P., & Zamroni, A. (2024). Development of 3S-Based Nursing Care Instruments (SDKI, SLKI, SIKI) in Patients with Ventilators. *Indonesian Journal of Global Health Research*, 6(1), 205-212. <https://doi.org/10.37287/ijghr.v6i1.2629>.

## INTRODUCTION

Nursing care documentation is a record of nursing care regarding plans and actions given to patients by qualified nurses (Tasew et al., 2019). Quality nursing care documentation instruments must be based on the Indonesian Nursing Diagnosis Standards (SDKI), Indonesian Nursing Outcome Standards (SLKI), and Indonesian Nursing Intervention Standards (SIKI) (Widodo et al., 2020). Documentation of nursing care in the ROI (Intensive Observation Room) Dr. Soetomo has used integrated Electronic Medical Records (EMR) for all caregiving professionals. However, nursing care in the EMR uses a separate format for each stage of nursing care, and the implementation of the Indonesian 3S nursing documentation standards (SDKI, SLKI, SIKI) is still poorly implemented.

Separate nursing care instruments make nurses in the filling process feel confused and do not describe the process of providing continuous nursing care so nurses have difficulty evaluating the success of nursing outcomes. In addition, during accreditation, there were difficulties in demonstrating the process of documenting nursing care that had been provided to patients. Observation results at ROI RSUD Dr. Soetomo, from June to October 2022, most documentation of the nursing process was carried out for intensive patients using ventilators, however, there are no nursing care instruments that focus on patients on ventilators. Several studies have evaluated the use of nursing documentation in critical patients. However, nursing care instruments according to 3S-based laws (SDKI, SLKI, SIKI) for critical patients have not been developed. This has an impact on the absence of 3S-based nursing care documentation instruments (SDKI, SLKI, SIKI) for patients with ventilators and is not optimal in solving problems for patients with ventilators. Thus, it is necessary to develop 3S-based nursing care instruments (SDKI, SLKI, SIKI) for patients using ventilators that comply with national standards.

Ethiopian research in 2019 stated that 56.5% of nursing documentation was incomplete and 82.2% had not implemented hospital-standardized nursing language (SNL) standards (Tasew et al., 2019). In line with research at the Gondar Ethiopian Teaching Hospital, more than a third of respondents 74 (36%) expressed the reasons for not carrying out nursing documentation; short time 19%, lots of patients 22%, no time and lots of patients 62%, no format 2.2%, and no place 4.3% (Kebede et al., 2017). Research regarding the implementation of the standard nursing language continuing education program (SNLCEP) in private hospitals in East Java, shows that the implementation of nursing care is 64% adequate assessment, 69% adequate nursing diagnosis, 59% adequate nursing plan, 66% adequate nursing implementation, 60 % of nursing care evaluations were adequate, and 62% of nursing care documentation was adequate (Trisno et al., 2020). Data from the Indonesian Ministry of Health, 2020, explains that 3 million patients were treated in the ICU in 2020 with 40-45% of them receiving nursing care on ventilators (Cecep et al., 2023). Based on data on the completeness of nursing assessments from July to October 2022 at ROI RSUD Dr. Soetomo Surabaya at 94%.

Nursing care documentation is a source of patient clinical information regarding patient actions and progress in manual or electronic form (Tasew et al., 2019). Nurses' work productivity in care documentation includes assessment, diagnosis, planning, implementation, and evaluation (Nursalam, 2020). Kopelman's theory, 1986, explains that nurse work productivity is influenced by organizational factors, individual nurses, and work. Incomplete nursing care documentation is caused by short filling times, a large number of patients, and no nursing care format (Kebede et al., 2017). The Indonesian National Nurses Association (PPNI) has published nursing documentation standards, namely the Indonesian Nursing Diagnosis Standards (SDKI), Indonesian Nursing Outcome Standards (SLKI) and Indonesian Nursing Intervention Standards (SIKI) (Widodo et al., 2020). Implementation of documentation standards and standardized nursing language (SNL) will improve the quality of health services because it can produce better continuity through increased communication between health workers, capturing more patient actions and developments. If nursing documentation does not apply standards, it will affect the process and results of nursing care (Adubi et al., 2018).

The development of 3S-based nursing care (SDKI, SLKI, SIKI) for patients on ventilators based on Kopelman's theory is the solution in this research. Development of nursing care to perfect the separate instrument format for each stage of nursing care to describe the process of

providing continuous nursing care. The implementation of 3S (SDKI, SLKI, SIKI) is based on Law No. 38 of 2014 regarding nursing practice which must be based on a code of ethics, service standards, professional standards, and standard operational procedures. Kopelman's theory (1986) states that the productivity of nursing care documentation is influenced by organizational characteristics, individual characteristics, and job characteristics. One of the most influential organizational factors is documentation standards and nursing language (Nursalam, 2020). Therefore, this researcher aims to research and develop 3S-based nursing care instruments (SDKI, SLKI, SIKI) for patients using ventilators.

## METHOD

The design in this research is descriptive research with a Research and Development (R & D) approach which consists of 2 stages. The first stage of the research was to evaluate nursing care instruments, prepare nursing care instruments, and test validity and reliability tests in developing instruments for 3S-based nursing care (SDKI, SLKI, SIKI) for patients with ventilators that focus on airway and breathing. The second stage was to conduct a focus group discussion to discuss recommendations for developing instruments for 3S-based nursing care (SDKI, SLKI, SIKI) for patients on ventilators that focus on airway and breathing. The first stage population was 100 medical records of nursing care. The first stage was FGD 1, divided into 3 groups, namely 10 executive nurses, 5 nursing management staff, and 1 expert (academic and practitioner). The second stage population was 10 nurses who carried out trial assessments in developing instruments for 3S-based nursing care (SDKI, SLKI, SIKI) for patients with ventilators that focused on airway and breathing. In the second stage, FGD 2 was carried out with 6 participants from the hospital's nursing management team. The independent variable is in the development of instruments for 3S-based nursing care (SDKI, SLKI, SIKI) for patients with ventilators that focus on airway and breathing at Dr. RSUD. Soetomo Surabaya. Data was collected using observation sheets and validity and reliability assessment sheets. The analysis uses descriptive and CVI tests and KR20 tests. This research has received ethical permission from the Health Research Ethics Committee of RSUD Dr. Soetomo Surabaya with number 0725/KEPK/VII/2023.

## RESULTS

Development of nursing care instruments based on standards of care that have been determined by the Indonesian nursing professional organization, namely PPNI. The development of instruments for 3S-based nursing care (SDKI, SLKI, SIKI) for patients on ventilators which focuses on airway and breathing consists of 5 nursing diagnoses that often arise based on the problems and clinical conditions of patients on ventilators. Development of nursing care instruments in the form of nursing diagnoses, namely ineffective airway clearance (D.0001), impaired ventilator weaning (D.0002), impaired gas exchange (D.0003), impaired spontaneous ventilation (D.0004), and irregular breathing patterns. effective (D.0005).

Table 1.

Development of SOPs for Instrument Development in 3S-based Nursing Care (SDKI, SLKI, SIKI) for Patients on Ventilators

Component	Previous Instrument	Nursing Care Standards	Development of Nursing Care Instruments for Patients on Ventilators that Focus on Airway and Breathing
Nursing diagnosis	The actual nursing diagnosis component states the diagnosis title,	Diagnostic components Nursing refers to SDKI. Writing diagnosis is met PES elements (problems,	The nursing diagnosis that is prepared has columns for cause, major signs and symptoms, minor signs and

Component	Previous Instrument	Nursing Care Standards	Development of Nursing Care Instruments for Patients on Ventilators that Focus on Airway and Breathing
	and the causes and related clinical conditions have not yet appeared.	etiology, symptoms) for actual diagnosis, PR (problems, risk factors) for risk diagnosis, PS (problem, symptom) for the diagnosis of health promotion and related clinical conditions	symptoms, and clinical conditions in the actual diagnosis. Fill in using a checklist. Includes the assessment date, initials, and name of the PPJA.
Nursing outcomes	The nursing output component in the nursing care instrument is not by the SLKI, namely, it does not contain targets and time intervals for interventions to be carried out.	The components of nursing outcomes refer to SLKI. There is a label that contains the target time for the intervention, and expectations for the intervention to be carried out and there are indicator criteria for expected results and desired targets. There are value indicators for outcome criteria after the intervention is carried out.	Nursing outcomes are by the SLKI, namely meeting the name of the outcome, expectations, and outcome criteria (initial results, target, and time interval for the intervention to be carried out). Fill in using a checklist.
Nursing interventions	The components of nursing interventions are not by SIKI standards, namely that there is no name for the intervention.	The nursing intervention component refers to SIKI. There are labels: interventions carried out and actions that include observation, therapy, collaboration, and education.	Nursing interventions are by SIKI, which consists of the name of the intervention, as well as the action; observation, therapy, education, and collaboration so that collaboration can be understood so that it can be understood that it is by the SDKI-SIKI link.
Nursing implementation	The nursing implementation component is not by SIKI, namely that there is no intervention title and the format is still separate from the nursing intervention.	Nursing implementation refers to interventions that have been prepared based on SIKI.	Implementation refers to interventions that have been prepared based on SIKI. Implementation takes 3x8 hours and is filled in using a checklist and contains the initials and name of the PPJA.
Nursing evaluation.	The components of nursing evaluation are not by patient assessment standards, namely they do not meet results evaluation, and process evaluation, and the format is still separate from other nursing processes.	Evaluate nursing care based on patient assessment standards.	Evaluation of nursing care based on patient assessment standards includes an evaluation of the timing of providing nursing care. Evaluation of the process for 3 days, evaluation of re-assessment, and re-planning, and re-planning of the results of the care evaluation. Filling in is done using a checklist and includes the evaluation date, initials, and name of the PPJA.

The results of the validity and reliability test of the instrument involved 15 nurses with 1 case of a patient with a ventilator by 3 nurses with 3 nursing diagnoses each. The results of the validity and reliability test for the development of 3S-based nursing process documentation instruments (SDKI, SLKI, SIKI) for patients on ventilators are as follows:

Table 2.  
Validity Test of 3S-Based Nursing Process Documentation Instrument Development (SDKI, SLKI, SIKI) in Patients with Ventilators

Instrument Name	I-CVI	KR20	Description
Ineffective Airway Clearance	0,916667-1	0,833	Valid and reliable
Ventilator Weaning Disorders	0,916667-1	0,744	Valid and reliable
Gas Exchange Disturbances	0,83333-1	0,833	Valid and reliable
Spontaneous Ventilator Interruption	0,83333-1	0,851	Valid and reliable
Ineffective Breathing Pattern	0,916667-1	0,848	Valid and reliable

Table 2 shows the results of the validity of the instrument by calculating the I-CVI value. The results show that all instruments have a value of  $\geq 0.78$ , so all instruments are valid. The results of the instrument reliability test using KR20 (Kuder Richardson) show that all instruments have a reliability value of  $> 0.6$ , so they are declared reliable.

## DISCUSSION

Evaluation of nursing care instruments for patients on ventilators at RSUD Dr. Soetomo was measured using an observation sheet based on Indonesian nursing standards originating from PPNI, namely the Indonesian Nursing Diagnosis Standards (SDKI), Indonesian Nursing Outcome Standards (SLKI), and Indonesian Nursing Intervention Standards (SIKI). Observation results showed that five nursing diagnoses often appeared in patients with ventilators, namely ineffective airway clearance, impaired ventilator weaning, impaired gas exchange, impaired spontaneous ventilation, and ineffective breathing patterns. Documentation of nursing care for patients on ventilators at RSUD Dr. Soetomo already uses Electronic Medical Records (EMR). However, nursing care in the EMR uses a separate format for each stage of nursing care, and the implementation of the Indonesian 3S nursing documentation standards (SDKI, SLKI, SIKI) is still poorly implemented.

Standardized Nursing Language (SNL) is a standard, structured vocabulary that nurses use as a means of communication in describing patient care (Adubi et al., 2018). Standard nursing language is a structured vocabulary that provides nurses with a common means of communication to describe care, so it needs to be used consistently in clinical and academic settings to define nursing phenomena and actions. Standard nursing language is needed in nursing practice and education to plan, convey, and communicate the contribution of professional nursing practice to other nurses, other health workers, and health consumers (Ojo et al., 2020). The development of instruments for 3S-based nursing care (SDKI, SLKI, SIKI) for patients on ventilators that focus on airway and breathing was developed through FGD and expert consultation. Development of nursing care instruments based on care standards that have been determined by the Indonesian nursing professional organization, namely PPNI. The development of instruments for 3S-based nursing care (SDKI, SLKI, SIKI) for patients on ventilators which focuses on airway and breathing consists of 5 nursing diagnoses that often arise based on the problems and clinical conditions of patients on ventilators. Development of nursing care instruments in the form of nursing diagnoses, namely ineffective airway clearance (D.0001), impaired ventilator weaning (D.0002), impaired gas exchange (D.0003), impaired spontaneous ventilation (D.0004), and irregular breathing patterns effective (D.0005).

In developing the actual diagnosis component, columns for cause, major signs and symptoms, minor signs and symptoms, and clinical conditions were added. Then an additional health promotion diagnosis is carried out. Fill in using a checklist. The date of assessment, initials, and name of PPJA are listed. The nursing output component contains the name of the outcome, expectations, and outcome criteria (initial results, target, and time interval for the intervention to be carried out). Fill in using a checklist. The nursing intervention component consists of the name of the intervention, as well as the action: observation, therapeutic, education, and collaboration. The nursing implementation component refers to interventions that have been prepared based on SIKI, containing a period of 3 x 24 hours and filling in using a checklist, containing initials and the name of PPJA. The component of nursing care evaluation based on patient assessment standards includes an evaluation of the time for providing nursing care and a process evaluation for 3 days. re-assessment evaluation, and re-planning of care evaluation results, filling is done using a checklist, containing the evaluation date, initials, and name of the PPJA.

A ventilator is a technological machine used to assist human respiratory function (Fischa Awalina, et al, 2019). A mechanical ventilator is a positive or negative pressure breathing device that produces controlled airflow in the patient's airway so that it can maintain ventilation and provide oxygen for a long period (Dewantari and Nada, 2017). Mechanical ventilation is implemented with oxygenation through the use of high-concentration gas and positive pressure (Hall, Schmidt, and Kress, 2015). Patients with ventilation aim to ensure adequate oxygenation, reduce the work of breathing, and improve oxygen exchange disorders in the alveoli (Dewantari and Nada, 2017). Patients on ventilators will experience several nursing problems, both physiological, psychological, behavioral, relational, and environmental. Nursing problems that often arise in patients on ventilators are ineffective airway clearance, ineffective breathing patterns, impaired gas exchange, impaired ventilator weaning, disturbed sleep patterns, activity intolerance, acute pain, risk of aspiration, risk of infection, and impaired skin integrity. and networks (Sinarti et al., 2021).

The validity of 3S-based nursing care instruments (SDKI, SLKI, SIKI) in patients with ventilators that focus on airway and breathing is carried out using the CVI test. The CVI test results show that all question items in the 3S-based nursing care instrument (SDKI, SLKI, SIKI) for patients with ventilators that focus on airway and breathing are valid. Reliability of developing 3S-based nursing care instruments (SDKI, SLKI, SIKI) for patients with ventilators that focus on airway and breathing is carried out with KR20. The KR20 test results show that the 3S-based nursing care instruments (SDKI, SLKI, SIKI) for patients with ventilators that focus on airways and breathing are reliable. The preparation of instrument development must adhere to the principles of validity and reliability (Sukrisno et al., 2023). The principle of validity is the principle of instrument reliability in data collection. The principle of reliability is the similarity of the results of measurements or observations that are used to measure and observe many times at different times. Validity places greater emphasis on measurement tools or observations. Determining validity measurements must meet the relevance of the content of the instrument the relevant means of the subject and the method of measurement.

Research recommendations related to the development of 3S-based nursing care instruments (SDKI, SLKI, SIKI) for patients with ventilators that focus on airway and breathing. Based on the results of FGD 2, it was found that the development of SPO can be applied in carrying out care for patients with ventilators. This recommendation is based on the results of socialization regarding the opinions of nurses and the nursing management team. Most respondents thought

that the functionality, efficiency, and usability aspects were in the good category. The development of 3S-based nursing care instruments (SDKI, SLKI, SIKI) for patients with ventilators that focus on airway and breathing has been adjusted to the professional standards set by PPNI.

Law Number 38 of 2014 concerning Nursing emphasizes that nursing practice must be guided by codes of ethics, service standards, professional standards, and standard operational procedures. According to Law Number 36, article 36 of 2014 concerning health workers, it is stated that professional standards and professional service standards for each type of health worker are determined by professional organizations in the health sector and ratified by the minister. Article 66 states that every health worker in carrying out practice is obliged to comply with professional standards, professional service standards, and standard operational procedures. Nursing practice is based on a code of ethics, service standards, professional standards, and standard operational procedures by Law No. 38 of 2014 concerning Nursing Article 28 (UU No. 38, 2014). The Indonesian National Nurses Association (PPNI) as a professional nursing organization is nationally responsible for the professionalism of nurses and the quality of nursing care. PPNI as an Indonesian nursing organization has standards in nursing care services including SDKI, SLKI, and SIKI. The development of nursing care is by the standards set by PPNI, namely 3S (SDKI, SLKI, and SIKI). It is hoped that the development of 3S-based nursing care instruments (SDKI, SLKI, SIKI) for patients with ventilators that focus on airway and breathing can be applied in providing action to patients by installing ventilators in critical rooms. The development of 3S-based nursing care instruments (SDKI, SLKI, SIKI) for patients with ventilators that focus on airway and breathing can be recommended for use in hospitals and can improve the quality of service to patients.

## **CONCLUSION**

Evaluation of nursing care instruments from all aspects of the instrument based on the components of diagnosis, outcomes, intervention, implementation, and nursing evaluation is still lacking in the implementation of the Indonesian 3S nursing documentation standards (SDKI, SLKI, SIKI). Development of instruments for 3S-based nursing care (SDKI, SLKI, SIKI) for patients with ventilators that focus on airway and breathing in the form of nursing diagnoses, namely ineffective airway clearance (D.0001), ventilator weaning disorders (D.0002), exchange disorders gas (D.0003), impaired spontaneous ventilation (D.0004), and ineffective breathing pattern (D.0005). Testing the validity and reliability of instruments for 3S-based nursing care (SDKI, SLKI, SIKI) for patients with ventilators that focus on airway and breathing has been declared valid and reliable in terms of functionality, efficiency, and usability. Development of instruments for 3S-based nursing care (SDKI, SLKI, SIKI) for patients with ventilators which focuses on airway and breathing in general in good categories in terms of functionality, efficiency, and usability, so that they can be recommended for use by nurses with ventilator installation and can improve quality of hospital services.

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